UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,179	11/14/2003	Stefano Cervini	03-LJ-064	9391

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EXAMINER
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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _22 June 2009_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-7,9-21 and 23-28_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-7,9-21 and 23-28_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _14 November 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-7, 9-21 and 23-28 are pending.

Continued Examination Under 37 CFR 1.114

2.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 6/22/2009 has been entered.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   Claims 1-3, 6-7, 9-10, 13-17, 20-21, 23-24, 27 and 28 are rejected under 35 U.S.C. 103(a)

as being unpatentable over Wilkinson et al.(Wilkinson) US Patent no. 6094715, in view of Lorie

et al.(Lorie) US Patent No. 4435758, and further in view of Kalman(Kalman) US Patent No.

6823517.

5.   As per claim 1, Wilkinson teaches the invention as claimed including an apparatus for executing at least one single multiple data(SPMD) program in a microprocessor, said apparatus comprising:

a micro single instruction multiple data (SIMD) unit associated with a microprocessor (col 7, lines 25-27); and

a job buffer(BCI buffer) having an output coupled to an input of said SIMD unit(PME) (col 24, lines 49-55; col 75, lines 1-4), said job status comprising a program counter value and a loop-counter list, and wherein a job is a combination of program and an input data-set (col 24, lines 9-17; lines 34-47; col 33, lines 51-65 through col 34, lines 1-7; par. 26, lines 6-21; col 29, lines 44-52; col 39, lines 60-65; col 27, lines 6-21).

Wilkinson does not specifically disclose the said job status comprises loop-counter list.

It would have been obvious to a person in ordinary skill in the art at the time of the invention to have a loop count list as status of a task as it is well know variable and used to define the number a iteration a program needs to confirm the instruction execution is complete and also gives the system ability to resume/restart from the same position after a context switch.

Wilkinson does not specifically disclose wherein said job buffer dynamically bundling jobs into a task based on an equivalence of a job status of said jobs and allocates said task to said micro SIMD unit.

However, Lorie teaches wherein said job buffer dynamically bundling jobs into a task based on an equivalence of a job of said jobs and allocates said task to said micro SIMD unit, said job status comprising a program counter value and a loop-counter list (col 1, lines 32-45;).

6.   It would have been obvious to a person of ordinary skill in art at the time of invention

was made to incorporate the teaching of Lorie into method of Wilkinson to dynamically bundle

the similar jobs into a task for execution on a SIMD unit. The modification would have been

obvious because one of the ordinary skills of the art would bundle the similar tasks together and

allocate them to a SIMD unit to minimize the inter-processor communication.

Lorie do not specifically disclose that the said job buffer dynamically bundling jobs into a

task based on an equivalence of a job status of said jobs.

However Kalman teaches said job buffer dynamically bundling jobs into a task based on

an equivalence of a job status of said jobs (col 10, lines 9-26).

7.   It would have been obvious to a person of ordinary skill in art at the time of invention

was made to incorporate the teaching of Kalman into the combined method of Lorie and

Wilkinson to dynamically bundle the job based on job status. The modification would have been

obvious because one of the ordinary skills of the art would bundle the job with same status to

maximize system efficiency.

8.   As per claim 2, Wilkinson teaches said micro SIMD unit is capable of sending job status

information to said job buffer (col 73, lines 1-4; col 48, lines 28-30).

9.   As per claim 3, Wilkinson teaches said at least one SPMD program comprises a plurality

of input data streams having moderate diversification of control flows (col 8, lines 25-29).

10.   As per claim 6, Wilkinson teaches said apparatus executes a plurality of SPMD programs

and wherein each SPMD program of said plurality of SPMD programs is executed on a number

of input data streams (col 8, lines 19-2).

11.   As per claim 7, Wilkinson teaches said number of input data streams is greater than a

program granularity threshold (col 41, lines 24-36).

12.   As per claim 9, Lorie teaches said apparatus performs job clustering to form a job bundle

in which each job in said job bundle has an equivalent control flow (col 1, lines 32-45).

13.   As per claim 10, Kalman teaches said apparatus performs said job clustering based on a

job processing status of said jobs in said job bundle (col 10, lines 9-26).

14.   As per claim 13, Lorie teaches said apparatus maximizes a size of a job cluster by

selecting tasks for execution in which a job processing status of each of said tasks is complete

(col 8, lines 51-67).

15.   As per claim 14, Wilkinson teaches said apparatus executes a data loading phase for a

task before said apparatus executes a task execution phase for said task (col 24, lines 2-8; lines

17-26).

16.   Claims 15-17, 20 and 21 are system claims of claims 1-3, 6 and 7 above. They are

therefore rejected under the same rational.

17.   As per claims 23, 24, 27 and 28, they have similar limitations as of claims 9, 10, 13 and

14 above. Therefore, they are therefore rejected under the same rational of claims 9, 10, 13 and

14 above.

18.   Claims 4, 5, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Wilkinson et al.(Wilkinson) US Patent no. 6094715, in view of Lorie et al.(Lorie) US Patent No.

4435758, and further in view of Kalman(Kalman) US Patent No. 6823517, as applied to claims 1

and 15 above, and in view of Pechanek et al. US Patent No. 6,470,441 B1.

19.   As per claim 4, Wilkinson does not specifically discloses apparatus executes said at least

one SPMD program once for each input data stream of said plurality of input data streams.

20.   However, Pechanek teaches said apparatus executes said at least one SPMD program

once for each input data stream of said plurality of input data streams (col 4, lines 62-65).

21.   It would have been obvious to a person of ordinary skill in art at the time of invention

was made to incorporate the teaching of Pechanek into combined method of Kalman, Wilkinson

and Lorie to execute SPMD once for each data stream. The modification would have been

obvious because one of the ordinary skills of the art would have a SPMD program execution

once for each data input stream as it would reduce the latency of process execution.

22.   As per claim 5, Wilkinson teaches said apparatus generates an instruction stream for each

input data stream of said plurality of input data streams (col 8, lines 25-28).

23.   As per claims 18 and 19, they have similar limitations as of claims 4 and 5 above.

Therefore, they are therefore rejected under the same rational of claims 4 and 5 above.

24.   Claims 11, 12, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Wilkinson et al.(Wilkinson) US Patent no. 6094715, in view of Lorie et al.(Lorie) US Patent No.

4435758, and further in view of Kalman(Kalman) US Patent No. 6823517, as applied to claims 1

and 15 above, and further in view of "Multi-thread VLIW processor architecture for HDTV

decoding" by Hansoo Kim(Kim).

25.   As per claim 11, Wilkinson and Lorie do not specifically disclose forces a task to

terminate at a point where a job control path might fork by placing a code-stop.

26.   However, Kim teaches said apparatus forces a task to terminate at a point where a job

control path might fork by placing a code-stop in said task (page 3, col 1, lines 3-8, "the program

can ………… entries exceeds a predefined number.")

27.   Therefore, it would have been obvious to a person of ordinary skill in art at the time of

invention was made to incorporate the teaching of Kim into the combined method of Kalman,

Wilkinson and Lorie to have a task termination point to switch task. The modification would

have been obvious because one of the ordinary skills of the art would have a task switch to fulfill

special conditions of system execution and prioritize execution.

28.   As per claim 12, Kim teaches said apparatus minimizes a required number of code-stops

to be placed in said task by excluding from code-stop placement each control flow statements

that is equivalent to a select instruction (page 3, col 1, lines 3-8, "the program can ………..

exceeds a predefined number.").

29.   As per claims 25 and 26, they have similar limitations as of claims 11 and 12 above.

Therefore, they are therefore rejected under the same rational of claims 11 and 12 above.

Response to Argument

30.   Applicant's arguments with respect to claim(s) have been considered but are moot in view

of the new ground(s) of rejection.

Conclusion

31.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to ABDULLAH AL KAWSAR whose telephone number is

(571)270-3169. The examiner can normally be reached on 7:30am to 5:00pm, EST.

32.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

33.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/   /Abdullah-Al Kawsar/
Supervisory Patent Examiner, Art Unit 2195   Examiner, Art Unit 2195